

## THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the above-referenced application.

**1-13.** (Cancelled)

**14.** (Previously Presented) A receiver comprising:

a bank of correlators for receiving a received signal that is a linear combination of a set of non-orthonormal signature signals that has undergone some distortion; and

a set of correlating signals; wherein

the bank of correlators cross-correlates the received signal with a the set of correlating signals to produce a vector output, and

the set of correlating signals is orthogonal and is determined by minimizing the least-squares error between the set of correlating signals and the set of signature signals.

**15.** (Cancelled)

**16.** (Previously Presented) A receiver comprising:

a bank of correlators for receiving a received signal that is a linear combination of a set of non-orthonormal signature signals that has undergone some distortion; and

a set of correlating signals; wherein

the bank of correlators cross-correlates the received signal with the set of correlating signals to produce a vector output, and

the set of correlating signals is orthogonal and is determined by minimizing the least-squares error between the set of correlating signals and a set of decorrelator signals  $v_m(t)$  corresponding to  $\mathbf{V} = \mathbf{S}(\mathbf{S}^*\mathbf{S})^{-1}$  where  $\mathbf{S}$  is the matrix corresponding to the signature signals.

**17.** (Previously Presented) A receiver comprising:

a bank of correlators for receiving a received signal that is a linear combination of a set of signature signals that has undergone some distortion; and

a set of correlating signals; wherein

the bank of correlators cross-correlates the received signal with the set of correlating signals to produce a vector output, and

the set of correlating signals is a set of geometrically uniform signals and is determined by minimizing the least-squares error between the set of correlating signals and the set of signature signals.

**18-19.** (Cancelled)

**20.** (Previously Presented) The receiver of claim **14**, wherein the set of correlating signals is a set of projected orthogonal signals.

**21-22.** (Cancelled)

**23.** (Previously Presented) The receiver of claim **17**, wherein the set of correlating signals is a set of projected geometrically uniform signals.

**24-36.** (Cancelled)

**37.** (Previously Presented) A method for processing signals in a multi-signature system comprising the steps of:

receiving a signal that is a linear combination of a set of non-orthonormal signature signals that has undergone some distortion;

cross-correlating the received signals with a set of correlating signals; and

determining the set of correlating signals by requiring the correlating signals to be orthogonal and minimizing a least-squares-error between the signature signals and the set of correlating signals.

**38-39.** (Cancelled)

**40.** (Previously Presented) A method for processing signals in a multi-signature system comprising the steps of:

receiving a signal that is a linear combination of a set of signature signals that has undergone some distortion;

cross-correlating the received signals with a set of correlating signals; and

determining the set of correlating signals by requiring the correlating signals to be

geometrically uniform and minimizing a least-squares-error between the signature signals and the set of correlating signals.

**41.** (Cancelled)

**42.** (Previously Presented) A method for processing signals in a multi-signature system comprising the steps of:

receiving a signal that is a linear combination of a set of signature signals that has undergone some distortion;

cross-correlating the received signals with a set of correlating signals; and

determining the set of correlating signals by requiring the correlating signals to be orthogonal and minimizing a least-squares-error between the set of correlating signals and a set of decorrelator signals  $v_m(t)$  corresponding to  $\mathbf{V} = \mathbf{S}(\mathbf{S}^*\mathbf{S})^{-1}$  where  $\mathbf{S}$  is the matrix corresponding to the signature signals.

**43.** (Previously Presented) The method of claim **37**, wherein the set of correlating signals is a set of projected orthogonal signals.

**44-45.** (Cancelled)

**46.** (Previously Presented) The method of claim **40**, wherein the set of signals is a set of projected geometrically uniform signals.

**47-55.** (Cancelled)